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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/572,595	10/24/2006	Keiichi Yano	287530US0X PCT	2913

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EXAMINER
LI, MEIYA

ART UNIT	PAPER NUMBER
2811	

NOTIFICATION DATE	DELIVERY MODE
11/13/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/572,595	YANO, KEIICHI	
	Examiner	Art Unit	
	MEIYA LI	2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 August 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 3-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *8/8/08*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement (IDS) submitted on August 8, 2008 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1, 3-9 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. There is no support in the specification for the claim limitations of "the light emitting device comprise a vapor-deposited metal film and via holes" as recited in claim 1.

Claim Rejections - 35 USC § 103

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. Claims 1, 4, 5, 8 and 9, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. (2004/0262738) in view of Hikasa et al. (5,770,821).

As for claim 1, Lee et al. show in Fig. in Fig. 2B and related text a light emitting apparatus 200 comprising:

an substrate 110; and

a light emitting device 250 arranged on a front surface 112 of the substrate,

wherein the front surface of the substrate, on which the light emitting device is arranged,

wherein the light emitting device comprises a vapor-deposited metal film 130/132 and via holes 116/118, the vapor-deposited metal film being arranged on the front surface of the substrate around the light emitting device and having a reflectivity of 90% or more with respect to light emitted from the light emitting device (claim 4), and the via holes penetrating the substrate from the front surface ([0019], lines 1-3), on which the light emitting device is arranged, to the rear surface of the substrate to thereby allow conduction to the light emitting device from the rear surface, and

wherein the vapor-deposited metal film comprises aluminum or silver (claim 4).

Regarding the process limitations ("vapor-deposited"), these would not carry patentable weight in this claim drawn to a structure, because distinct structure is not necessarily produced.

Note that a “product by process” claim is directed to the product per se, no matter how actually made, *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See also *In re Brown*,

173 USPQ 685; *In re Luck*, 177 USPQ 523; *In re Fessmann*, 180 USPQ 324; *In re Avery*, 186 USPQ 161; *In re Wertheim*, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); and *In re Marosi et al.*, 218 USPQ 289, all of which make it clear that it is the patentability of the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. Note that the applicant has the burden of proof in such cases, as the above case law makes clear.

Lee et al. do not disclose that the substrate is a co-fired aluminum nitride, and the front surface of the co-fired aluminum nitride substrate is mirror-polished so as to have a surface roughness of 0.3 μm Ra or less.

Hikasa et al. teach in Fig. 3 and related text a co-fired aluminum nitride substrate 1, a surface 1a thereof is mirror-polished so as to have a surface roughness of 0.3 μm Ra or less (Col. 5, lines 6-7; Col. 8, lines 51-55).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to include the mirror-polished co-fired aluminum nitride substrate with the surface roughness of 0.3 μm Ra or less, as taught by Hikasa et al., in Lee et al.'s device, in order to improve the thermal conductivity and the mechanical strength of the device.

As for claim 4, the prior art combined device shows the co-fired aluminum nitride substrate carrying the light emitting device has a surface roughness of 0.1 μm Ra or less.

As for claim 5, Lee et al. and Hikasa et al. disclosed substantially the entire claimed invention, as applied to claim 1 above, except the light emitting device is mounted on the co-fired aluminum nitride substrate through a metal bump.

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to include a metal bump, in Lee et al. and Hikasa et al.'s device, in order to utilize the total chip area to make the I/O connections, and increases productivity and simplifies the manufacturing process.

As for claim 8, the prior art combined device shows the vapor-deposited metal film has a thickness of 1 to 5 μm.

As for claim 9, the prior art combined device shows the vapor-deposited metal film is deposited via a chemical vapor deposition method or a sputtering method.

Regarding the process limitations ("deposited via a chemical vapor deposition method or a sputtering method"), these would not carry patentable weight in this claim drawn to a structure, because distinct structure is not necessarily produced.

Note that a “product by process” claim is directed to the product per se, no matter how actually made, *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See also *In re Brown*, 173 USPQ 685; *In re Luck*, 177 USPQ 523; *In re Fessmann*, 180 USPQ 324; *In re*

Avery, 186 USPQ 161; *In re Wertheim*, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); and *In re Marosi et al.*, 218 USPQ 289, all of which make it clear that it is the patentability of the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. Note that the applicant has the burden of proof in such cases, as the above case law makes clear.

6. Claim 3, as best understood, is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. (2004/0262738) and Hikasa et al. (5,770,821), as applied to claim 1 above, in view of Nakabayashi et al. (2002/0167017).

Lee et al. and Hikasa et al. disclosed substantially the entire claimed invention, as applied to claim 1 above, including a LED chip as the light emitting device (Lee: [0027], lines 4-5).

Lee et al. and Hikasa et al. do not disclose at least one peripheral component arranged on the co-fired aluminum nitride substrate, wherein the at least one peripheral component is selected from the group consisting of diodes for inhibiting reverse current, resistances, and thermistors.

Nakabayashi et al. teach in Fig. 6 and related text at least one peripheral component 135 arranged on the substrate, wherein the at least one peripheral component is selected from the group consisting of diodes for inhibiting reverse current, resistances, and thermistors ([0086], line 17).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to include at least one peripheral component selected from the group consisting of diodes for inhibiting reverse current, resistances, and thermistors, as taught by Nakabayashi et al., in Lee et al. and Hikasa et al.'s device, in order to prevent an accumulation of electrostatic charge in the device.

7. Claims 6 and 7, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. (2004/0262738) and Hikasa et al. (5,770,821), as applied to claim 1 above, in view of Arai et al. (4,220,810).

Lee et al. and Hikasa et al. disclosed substantially the entire claimed invention, as applied to claim 1 above, except a white resist film is arranged on an exposed front surface of the co-fired aluminum nitride substrate other than a region where the vapor-deposited metal film is arranged, wherein the resist film comprises a solder resist ink and is formed by screen printing method.

Regarding the process limitations ("formed by screen printed method"), these would not carry patentable weight in this claim drawn to a structure, because distinct structure is not necessarily produced.

Note that a “product by process” claim is directed to the product per se, no matter how actually made, *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See also *In re Brown*, 173 USPQ 685; *In re Luck*, 177 USPQ 523; *In re Fessmann*, 180 USPQ 324; *In re Avery*, 186 USPQ 161; *In re Wertheim*, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); and *In re Marosi et al.*, 218 USPQ 289, all of which make it clear that it

is the patentability of the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. Note that the applicant has the burden of proof in such cases, as the above case law makes clear.

Arai et al. teach in Fig. 3 and related text a white resist film 13 is arranged on an exposed front surface of the substrate other than a region where the vapor-deposited metal film is arranged, wherein the resist film comprises a solder resist ink and is formed by screen printing method (Col. 2, lines 6-65).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to include the white resist film, as taught by Arai et al., in Lee et al. and Hikasa et al.'s device, in order to prevent solder bridging, to reduce solder pickup, to eliminate the oxidation or corrosion of metallization pattern and the electromigration, and to protect the substrate at the time of assembling.

Response to Arguments

8. Applicant's arguments with respect to claims 1 and 3-7 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MEIYA LI whose telephone number is (571)270-1572. The examiner can normally be reached on Monday-Friday 7:30AM-5:00PM Eastern Standard Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynne Gurley can be reached on (571) 272-1670. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. L./
Examiner, Art Unit 2811
11/6/2008

/Ori Nadav/
Primary Examiner, Art Unit 2811